Solar Rain

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In order to escape from the Sun, an elementary calculation shows that one needs, for a single Hydrogen atom, an energy of 2.8 keV.
Given that the thermal energy at the Sun's surface is about 0.5eV, this is a thermal impossibility.
And there are no other options around.
This rules out the existence of any "solar wind".
"Solar wind" was invented in order to account for polar lights.
Problem is only that polar lights occur at night, with the pole concerned in a winterly position.
But if any "solar wind" were responsible, it would be polar lights during daytime, with the pole in a summerly position (see figure 1)

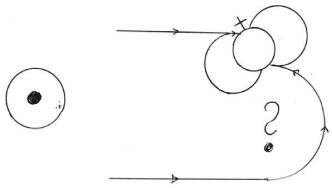

figure 1

We might instead emit the hypothesis of *Solar Rain*, which is simply gases falling on the Sun.
Why does it rain on Earth? Because the water in the clouds is attracted towards the ground.
Same for the Sun.
Sure, gas clouds can have transverse velocities leading to orbiting or simply exceed escape velocities. But outside of these cases, there is still plenty of matter in the universe that can make up this solar rainfall.
Solar Rain immediately solves our polar lights problem: they will now occur at night, with the pole in a winterly position, just as observed.
We might assume that gases fall radially on the Sun. The Earth will then have a relative transverse velocity.
Assuming that gases have zero velocity at infinity, their speed at Earth's orbit will be of the same order (42 km/s) as Earth's transverse velocity (30km/s).
This introduces an impact angle relative to Earth's path (54,4°) which determines occurences of polar light as a function of season (see figure 2).

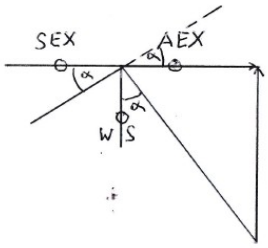

figure 2

Maximum polar light activity (PLA) will not occur at winter solstice (WS) but about 5 weeks before WS, between autumn equinox (AEX) and winter solstice (WS).
Likewise, PLA will commence about 5 weeks before autumn equinox (AEX).
PLA will cease 5 weeks before spring equinox (SEX).

The moon will influence the activity, blocking influx during full moon.

If Solar Rain were just falling radially on the sun, there would not be much to be expected except a tenuous plasma around the sun, with temperatures not necessarily very high.
But we have the planets, Earth among others, which deflect falling gases. These deflections lead gases to have relative velocities in the Sun's vicinity, leading to collisions.
We have already seen the keV energy scale (per proton). Collision energies and, thus, apparent temperatures of the plasma near the Sun will then be of the same order, millions of Kelvin.
This, of course, describes well the Sun's Corona.
Corona activity becomes a function of planetary constellations.
(see figure 3)

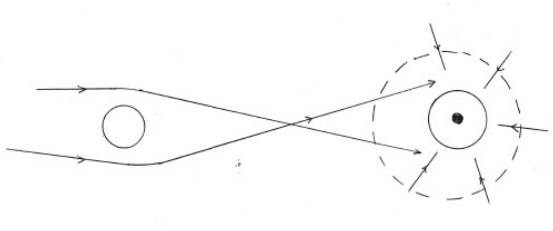

figure 3

One might ask whether Solar Rain energy can account for sun's radiation.
The quick answer is NO and the reason is the existence of Fraunhofer lines.
Fraunhofer lines need absorption in a cool, relatively dense gas as one might assume in the upper sun atmosphere.
It must be cool in order to avoid excited atoms which would radiate.
It must be dense in order to make excited atoms lose energy through collisions.
If Solar Rain created sun's radiation, this would lead to a top-down situation making Fraunhofer lines impossible.

Still, let us calculate the Solar Rain gas density, at Earth orbit, needed to create sun's radiation.
We assume solar power of 1kW/sqm at Earth orbit (solar constant).
This leads to a Solar Rain density of about 2×10^{-12} atmospheric density at earth orbiy.
This would be compatible with current models of very high altitude atmospheric density, being no impediment for satellite operation.
Isn't it amazing how much energy there can be in so little matter?